In the Claims:

Please amend the claims as follows:

1. (currently amended) A method for programming an industrial robot to move relative to defined positions on an object, wherein the programming is based on a geometric model of the object, the method comprising:

registering and storing a plurality of measuring points, each measuring point corresponding to a point on ~~the~~ a surface of the ~~real~~ object expressed in ~~any~~ a coordinate system associated with the robot; ~~robot,~~

calculating one or a plurality of characteristic parameters for a plurality of different parts of the object based on the geometrical model of the object;

determining ~~the~~ an orientation and position of the geometrical model of the object relative to said coordinate system associated with the robot by adapting the geometrical model of the object ~~and~~ to the measuring points ~~to each other~~, wherein adapting the geometrical model of the object to the measuring points comprises adapting measuring points belonging to a certain part of the object to the corresponding part of the geometrical model;

determining to which part of the object a measuring point belongs based on said characteristic parameters;

calculating ~~the~~ a deviation between the measuring points and corresponding points on the geometrical model for at least some of the measuring point; ~~point, and~~

adjusting said defined positions based on said calculated deviations; and

providing the adjusted defined positions to a control system of the robot.

2. (cancelled)

3. (currently amended) The method according to claim ~~2~~ 1, wherein said parts comprise surfaces and edge lines of the object.

4. (previously amended) The method according to claim 1, further comprising:

providing geometric models for a plurality of different objects,

calculating a plurality of characteristic parameters for each of the objects based on the geometrical model of the object, and

determining to which of the objects the measuring points belong based on the measuring points and said characteristic parameters.

5. (currently amended) The method according to claim ~~2~~ 1, wherein said characteristic parameters comprise the normal direction relative to the surface of the object and the bending of the surface of the object.

6. (previously amended) The method according to claim 1, wherein the geometrical model of the object and the measuring points are adapted to each other by minimizing the distance between the measuring points and corresponding points on the geometrical model of the object.

7. (previously amended) The method according to claim 1, wherein the surfaces of the

object are divided into a plurality of sub-surfaces, each comprising at least one measuring point, calculating a correction vector based on the deviation between the measuring point/measuring points in the sub-surface and corresponding point/points on the geometrical model of the object, and adjusting said defined positions based on the correction vectors for sub-surfaces belonging to the positions.

8. (previously amended) The method according to claim 1, wherein the edge lines of the object are divided into a plurality of line segments, each comprising at least one measuring point, calculating a correction vector based on the deviation between the measuring point/measuring points in the line segment and corresponding point/points on the geometrical model of the object, and adjusting said defined positions based on the correction vectors for line segment in the vicinity of the defined positions.

9. (previously amended) The method according to claim 1, wherein said defined positions are defined relative to the geometrical model and that the defined positions are transformed to said associated coordinate system based on the determined orientation and position of the geometrical model relative to the coordinate system associated with the robot.

10. (previously amended) The method according to claim 1, wherein said measuring points correspond to the positions of the robot when a predetermined point on a tool, or a measuring device corresponding to the current tool, is in contact with different points on the surface of the object.

11. (previously amended) The method according to claim 1, wherein the method comprises generating a surface-scanning program for automatically controlling the movements of the robot during measuring of said measuring points.

12. (previously amended) The method according to claim 11, wherein a sensor is mounted on a tool or on a measuring device corresponding to the current tool and that the sensor cooperates with the robot during generation of said measuring points.

13. (previously amended) The method according to claim 12, wherein the surface scanning program controls the movements of the robot during measuring of the measuring points, wherein said movements comprises moving the robot so that the sensor is in contact with the surface of the object during the measuring and that the robot thereafter is moved to a transfer point positioned at a distance from the surface of the object.

14. (previously amended) The method according to claim 12, wherein the orientation of the tool in the defined positions are stored and that the program is generated so that the tool or said measuring device have about the same orientation in a measuring point as the stored orientation.

15. (previously amended) The method according to claim 11, wherein the positions of the measuring points are determined off-line based on the geometrical model of the object.

16. (previously amended) The method according to claim 11, wherein the method

comprises that a number of positions, comprising at least one start position and one stop position are measured on the surface of the real object and that the positions of the measuring points are automatically generated based on the measured positions.

17. (cancelled)

18. (currently amended) A computer program product, comprising:

a readable medium; and ~~comprising a~~

computer program~~, comprising~~ instructions recorded on the computer readable medium and executable by ~~to make~~ a processor to carry out the steps of:

registering and storing a plurality of measuring points, each measuring point corresponding to a point on ~~the~~ a surface of ~~the real~~ an object expressed in ~~any~~ a coordinate system associated with ~~the~~ an industrial robot,

calculating one or a plurality of characteristic parameters for a plurality of different parts of the object based on a geometrical model of the object,

determining ~~the~~ an orientation and position of the geometrical model of the object relative to said coordinate system associated with the robot by adapting the geometrical model of the object ~~and~~ to the measuring points ~~to each other~~, wherein adapting the geometrical model of the object to the measuring points comprises adapting measuring points belonging to a certain part of the object to the corresponding part of the geometrical model,

determining to which part of the object a measuring point belongs based on said characteristic parameters,

calculating ~~the~~ a deviation between the measuring points and corresponding points on the

geometrical model for at least some of the measuring points, ~~and~~

adjusting said defined positions based on said calculated deviations, and

providing the adjusted defined positions to a control system of the robot.

19. (currently amended) A system for programming an industrial robot to move relative to defined positions on an object, wherein the system comprises

a geometric model of the object,

the real object,

an industrial robot, wherein the real object and the robot are arranged to that it is possible to, by means of the robot, generate a plurality of measuring points corresponding to different points on the surface of the real object expressed in a coordinate system associated with the robot,

a calibration module arranged to determine orientation and position of the geometrical model of the object relative to said coordinate system associated with the robot by adapting the measuring points to the geometrical model of the object,

a part classification module arranged to calculate one or a plurality of characteristic parameters for a plurality of different parts of the object, based on the geometrical model for the object, and to determine to which part of an object a measuring point belongs, based on said characteristic parameters, wherein said calibration module is adapted to execute said adaptation of the geometrical model of the object to the measuring points by adapting the measuring points belonging to a certain part of the object to a corresponding part of the geometrical model,

a calculating module arranged to receive the measuring points and corresponding points from the calibration module to calculate the deviation between the measuring points and

corresponding points on the geometrical model, and

a control system comprising an adjusting module arranged to receive the deviation from the calculating module and to adjust said defined positions based on said calculated deviations and direct movement of the robot to the adjusted defined positions.

20. (currently amended) The system according to claim 19, ~~wherein the system comprises~~ further comprising:

a measuring device adapted for being in contact with the surface of the object during measuring, wherein the measuring device has a center point corresponding to the tool center point of the current tool.

21. (previously amended) The system according to claim 20, wherein the measuring device is adapted to, at contact with the object, submit a signal, and that the system is adapted to, in reply to said signal, generate at least one measuring point based on the robot position.

22. (cancelled)

23. (currently amended) The system according to claim ~~22~~ 19, wherein said parts comprise surfaces and edge lines of the object.

24. (previously amended) The system according to claim 19, further comprising:

geometric models for a plurality of different objects and an object classification module arranged to calculate a plurality of characteristic parameters for each of the objects based on the

geometrical model of the objects and to determine to which of the different objects the measuring point belongs based on the measuring points and the calculated characteristic parameters.

25. (currently amended) The system according to claim ~~22~~ 19, wherein said characteristic parameters comprise the normal direction relative to the surface of the object and the bending of the surface of the object.

26. (previously amended) The system according to claim 19, wherein said calibration module is arranged for adapting the geometrical model of the object and the measuring points to each other by minimizing the distance between the measuring points and corresponding points of the geometrical model of the object.

27. (previously amended) The system according to claim 19, wherein said adjusting module comprises means for dividing the surfaces of the object into a plurality of sub-surfaces, each comprising at least one measuring point and the adjusting module is arranged to calculate a correction vector for the sub-surfaces based on the deviation between the measuring point/measuring points of the sub-surface and corresponding point/points on the geometrical model of the object, and to adjust said defined positions based on the correction vectors for the sub-surfaces to which the positions belong.

28. (previously amended) The system according to claim 19, wherein said adjusting module comprises means for dividing the edge lines of the object into a plurality of line

segments, each comprising at least one measuring point and the adjusting module is arranged to calculate a correction vector for each line segment based on the deviation between the measuring point/measuring points in the line segment and corresponding point/points on the geometrical model of the object and to adjust said defined positions based on the correction vectors for the line segment in the vicinity of the defined positions.

29. (previously amended) The system according to claim 19, wherein said defined positions are defined relative to the geometrical model, wherein said adjusting module comprises means for transforming said defined positions to said coordinate system associated with the robot, based on the determined orientation and position of the geometrical model relative to a said coordinate system.

30. (previously amended) The system according to claim 19, further comprising:

a program generator, arranged for generating a surface scanning program for automatically controlling the movement of the robot during measuring of said measuring points.

31. (previously amended) The system according to claim 30, wherein said program generator is arranged for automatically generate said surface scanning program based on certain input from an operator.

32. (previously amended) The system according to claim 30, further comprising:

a sensor mounted on a tool, or a measuring device corresponding to the current tool, and wherein the sensor is arranged to cooperate with the robot for generating said measuring points.

33. (previously amended) The system according to claim 32, wherein said sensor is a position sensor arranged for measuring the distance between the surface of the object and any part of the robot.

34. (previously amended) The system according to claim 32, wherein the surface scanning program controls the movement of the robot during measuring of the measuring points, wherein said movements comprises that the robot is moved so that the sensor is in contact with the surface of the object during the measuring and that the robot thereafter is moved to a transfer point being positioned at a distance from the surface of the object.

35. (previously amended) The system according to claim 30, wherein the program generator is arranged in an external computer and wherein the program generator is arranged to determine the positions of the measuring points based on the geometrical model of the object.

36. (previously amended) The system according to claim 30, wherein the program generator is arranged in the control system of the robot and that the program generator is arranged for generating the positions of the measuring points based on a plurality of positions measured at the surface of the real object, which positions comprise at least one start position and one stop position.

37. (new) A method for programming an industrial robot to move relative to defined positions on an object, wherein the programming is based on a geometric model of the object, the

method comprising:

registering and storing a plurality of measuring points, each measuring point corresponding to a point on a surface of the object expressed in a coordinate system associated with the robot;

providing geometric models for a plurality of different objects;

calculating a plurality of characteristic parameters for each of the objects based on the geometrical model of the object;

determining to which of the objects the measuring points belong based on the measuring points and said characteristic parameters;

determining an orientation and position of the geometrical model of the object relative to said coordinate system associated with the robot by adapting the geometrical model of the object to the measuring points;

calculating a deviation between the measuring points and corresponding points on the geometrical model for at least some of the measuring point;

adjusting said defined positions based on said calculated deviations; and

providing the adjusted defined positions to a control system of the robot.

38. (new) A computer program product, comprising:

a readable medium; and

computer program instructions recorded on the computer readable medium and executable by a processor to carry out the steps of:

registering and storing a plurality of measuring points, each measuring point corresponding to a point on a surface of an object expressed in a coordinate system associated

with an industrial robot,

providing geometric models for a plurality of different objects,

calculating a plurality of characteristic parameters for each of the objects based on a geometrical model of the object,

determining to which of the objects the measuring points belong based on the measuring points and said characteristic parameters,

determining an orientation and position of the geometrical model of the object relative to said coordinate system associated with the robot by adapting the geometrical model of the object to the measuring points,

calculating a deviation between the measuring points and corresponding points on the geometrical model for at least some of the measuring point,

adjusting said defined positions based on said calculated deviations, and

providing the adjusted defined positions to a control system of the robot.